

# design ideas

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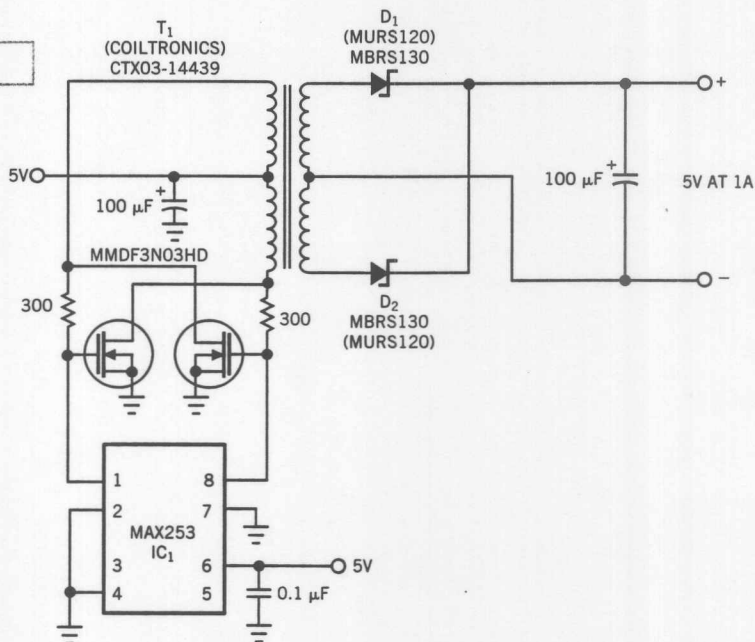
## Push-pull driver provides isolated 5V at 1A

Ron Young, Maxim Integrated Products, Sunnyvale, CA

**T**HE CIRCUIT IN **Figure 1** converts a regulated 5V input to an isolated 5V output with 1A

**Figure 1**

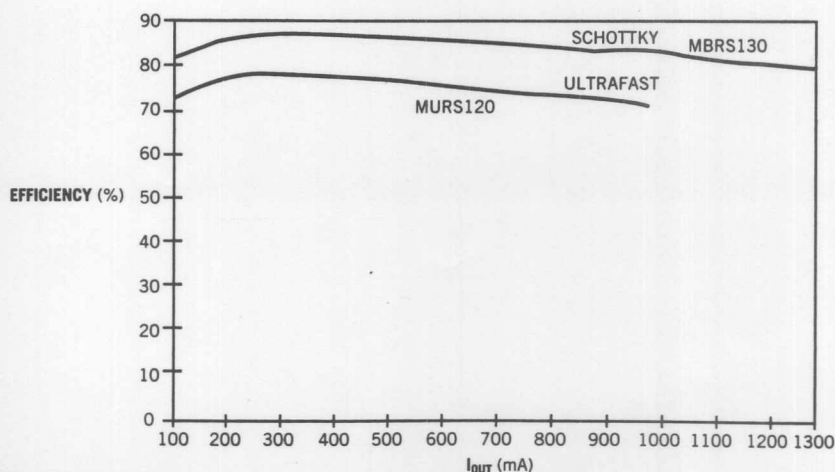
current-output capability. IC<sub>1</sub>, a push-pull transformer driver, powers a pair of cross-coupled power MOSFETs in a flip-flop-like configuration. In turn, the MOSFETs toggle the primary winding of a forward transformer. The transformer's secondary output, after rectification and filtering, provides the isolated 5V supply. Because the output voltage is unregulated, its voltage tolerance depends on the input-voltage range and the range of load current. With Schottky rectifiers, such as the MBRS130 for D<sub>1</sub> and D<sub>2</sub>, the circuit delivers 5V ± 10% at 700 to 1000 mA from a 5V ± 5% input with 80% efficiency (**Figure 2**). Using ultrafast-recovery silicon rectifiers, such as the MURS120, the circuit delivers 5V ± 10% at 200 to 500 mA from a 5V ± 5% input, with 77% efficiency. (DI #2502)



A simple circuit produces a 5V, 1A isolated output from a 5V regulated input.

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**Figure 2**

The efficiency of the circuit in **Figure 1** depends directly on the forward drops of the output rectifiers.